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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/990,144	11/21/2001	Binneg Y. Lao	89252.0004	2175

7590 10/22/2003

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EXAMINER

JONES, STEPHEN E

ART UNIT	PAPER NUMBER
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2817

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/990,144	LAO ET AL.	
	Examiner	Art Unit	
	Stephen E. Jones	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 and 31-89 is/are pending in the application.
- 4a) Of the above claim(s) 10, 16 and 31-80 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-15, 17-24 and 81-89 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>6/24/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 10, 16 and 31-80 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 7.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-9, 11-15, 17-24, and 81-89 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art Fig. 1 in view of James et al. (of record).

The admitted prior art Fig. 1 (and pages 2-4 of the background of the invention describing Fig. 1) teaches an IC package including all of the subject matter of the claims with the exception of the following: that the pair of microstrips have a substantially constant impedance throughout the length (Claims 1, 21, 23, 84); that the width increases as the conductors are outwardly routed and increases capacitance (Claims 2, 9, 11, 22, 24, 29, 82); that the signals are operating at least 1 Gbps (Claim 6, 88); that the width of the pair along the first partial length is not more than 5 mils and the spacing between the pair along the first partial length is not more than 5 mils or 3 mils (Claim 12, 86-87); or a plurality of non-coaxial conductors on a second outer edge of the substrate (Claim 81).

Also, regarding the new limitations in Claims 1, 21, and 23, since the admitted prior art teaches differential signals, it is inherent that a virtual ground exists since by definition it is a fundamental characteristic of differential signal lines including a capacitance which can be calculated between the lines and the virtual ground. Also, the admitted prior art background teaches a de-multiplexor (Claim 5).

Also, regarding the new claims 84-85, the admitted prior art background teaches a 10 mil thick substrate and 5 mil spacing between lines (e.g. see page 3 1st paragraph and page 4, 1st paragraph of the background of the present invention, which is about 1/2 the thickness of the substrate).

Furthermore, regarding claim 89, the background of the present invention teaches as many as 32 lines.

James et al. (Fig. 2) teaches an IC routing including: signal lines having widening portions as the line is routed away from the IC; the widened portions in combination with the uniform narrow portions compensate for mutual impedance (i.e. capacitance between adjacent lines) such that the characteristic impedance is constant (see Col. 5, lines 6-67).

Also, regarding the new limitations in Claim 81, since James teaches impedance matching along the entire length of the lines which implies matching to the source/load, it is inherent that the connector and transition region between the line and connector would also be included in the matching since otherwise a good impedance match as James teaches would not be possible. Also, the phrase "for carrying low speed signal" is not given any patentable weight since it is an intended use limitation.

It would have been considered obvious to one of ordinary skill in the art to have substituted widening signal lines such as taught by James et al. in place of the lines in the admitted prior art Fig. 1, because it would have provided the advantageous benefit of increased signal integrity and reduced crosstalk and a substantially constant impedance throughout the entire length of the lines (see James, Col. 2, lines 65-67), thereby suggesting the obviousness of such a modification.

Also, it would have been considered obvious to one of ordinary skill in the art to have chosen the signals to be operating at least 1 Gbps, because such an operating speed would have been a well-known high frequency signal rate for the high frequency device such as taught by the combination of the admitted prior art Fig. 1 and James et al.

Additionally, it would have been considered obvious to one of ordinary skill in the art to have selected the width of the pair along the first partial length to be not more than 5 mils and the spacing between the pair along the first partial length to be not more than 5 mils or 3 mils, because it would have been considered a mere optimization of the signal lines to obtain a pre-selected impedance value in the combination of the admitted prior art Fig. 1 and James structure.

Furthermore, it would have been considered obvious to one of ordinary skill in the art to have included an outer edge of the substrate to have non-coaxial connectors in the combination of the admitted prior art Fig. 1 and James et al. device, because the non-coaxial connectors would have provided a particular pre-selected connector means for connection of additional types of devices or conductors, thereby suggesting the obviousness of such a modification.

Regarding Claim 3, since the combination of the admitted prior art Fig. 1 and James et al. (as described above) teaches the same structure as is claimed the equation of Claim 3 would inherently be satisfied by the combination of the admitted prior art Fig. 1 and James et al. as well.

Response To Arguments

5. Applicant's arguments filed 7/28/03 have been fully considered but they are not persuasive.

Applicant argues that the background of the present invention teaches not only prior art but also the Applicant's own teachings.

This argument is not persuasive because applicant has not pointed to any particular recitations in the background information that was not known at the time of the present invention, and the examiner could not determine any particular information in the background of the present invention which is not included as part of what is described as prior art.

Applicant also argues that the admitted prior art and James do not teach a plurality of coaxial and non-coaxial connectors on the substrate.

This argument is not persuasive. The examiner took official notice in the previous office action indicating that the addition of non-coaxial connectors with the coaxial connectors of the combination of James and the admitted prior art would have provided a particular pre-selected connector means for connection of additional types of devices or conductors. The examiner points to the newly cited Rosenberger reference as evidence that using coaxial and non-coaxial connectors on a die package was well-known at the time of the present invention (e.g. see items 17 and 16).

Furthermore, applicant argues that the combination of the admitted prior art and James does not teach that the impedance matching includes the connector and transition region between the connector and line.

Applicant's argument is not persuasive, especially since James teaches impedance matching along the entire length of the lines which implies matching to the source/load (as is routine), it is inherent that the connector and transition region between the line and connector would also be included in the matching since otherwise a good impedance match as James teaches would not be possible.

6. In response to applicant's argument that James does not disclose a virtual ground or a capacitive value, or that the spacing between lines is not less than about $\frac{1}{2}$ of the thickness of the substrate, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

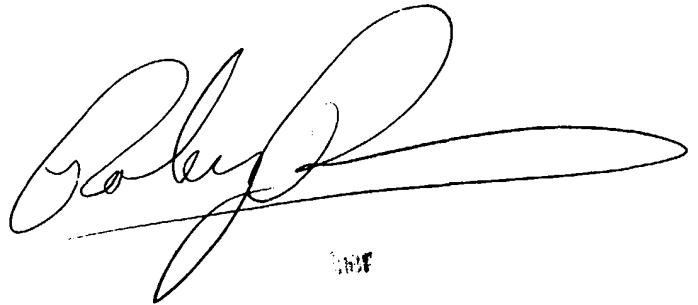
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen E. Jones whose telephone number is 703-305-

0390. The examiner can normally be reached on Monday through Friday from 8 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Pascal can be reached on 703-308-4909. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

SEJ

A handwritten signature in black ink, appearing to read "Robert J. Pascal", with a long horizontal flourish extending to the right. Below the signature, there is a small, faint rectangular stamp.